Success Story Naval Medical Center San Diego Co-Generation Project

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Project Manager

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NAVFAC Contractor's Guide:

 Partnering Philosophy – "We are partners in every contract we award. Partnering is an attitude that we both work hard to develop, an it requires both of us to take some extra risk and trust one another."

Co-Generation Team





Balboa Naval Medical Center Co-Generation



- Public Works Requested Survey of Hospital
- Performed by LSW Engineers
 - Initially 20 Options
 - 5 Options Analyzed
- Result:
 - One 4.3 MW Solar Centaur 50
 - Two Caterpillar Emergency Gen Sets
- SDG&E Proposed UESC

Balboa Naval Medical Center Co-Generation



Phase I – Feasibility Study

Phase II – Contract Negotiations

Phase III – Equipment Purchase

Phase IV - Contractor Release

Phase V – Construction

Phase VI – Commissioning

Phase VII - Close out

Gen Project Equipment



MAJOR COMPONETS

4.3 MW Solar Centaur 50





Heat Recovery Steam Generator





Hawthorne Diesel Generator Sets





Exterior viewof Hawthorne Switchgear





Interior view of Hawthorne Switchgear





Project Scope



Co-Gen Project Scope

- **Demo** of all of the existing equipment including turbines, heat recovery boilers, controls and switchgear.
- Turbine had to be inside created unexpected exhaust challenges
- Additional stack constructed for diesel generators. Existing stack reused for gas turbine
- New Steam header and condensate system modifications to accommodate existing boilers
- New Controls and switchgear for the cogeneration equipment and emergency generation equipment.

 New gas line to turbine. Existing line could not be reused.
- Added a gas compressor for the long run length.
- Diesel fuel purifier and filter system, to re-circulate the fuel oil within the existing 150,000-gallon underground storage tank system.

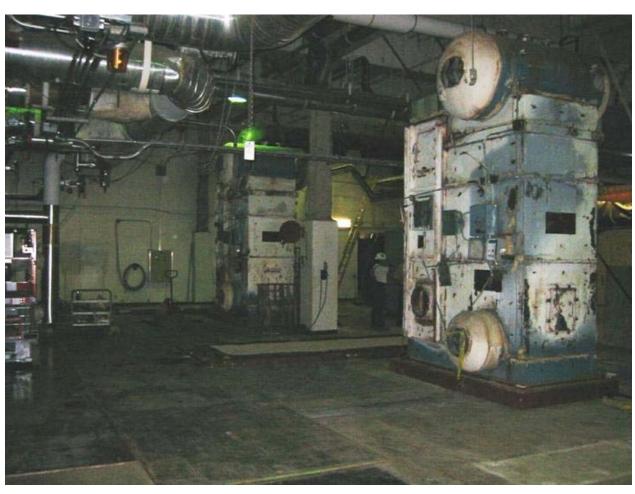
Technical Issues



CHALLENGES & RISKS

First Turbine Removed





Working Space Constraints





Existing Piping Under Central Plant Flooring





New Central Plant Flooring





New Tower Infrastructure





Old and New Exhaust Stacks





Gas Line from Compressor





Emergency Generators





Heat Recovery Steam Generator Leak Repairs





Exhaust Leak Repairs





Basic Contract Award



- Total Contract Value \$16,069,895.00
 - design portion \$1,263,250.00
 - construction portion \$14,806,635.00
- Basic Buy Down of \$6,838,000.00
 - financed with 180 day buy out option
- Basic Financed Value of \$9,231,885.00
- Interest Rate of 9.24% was
 - negotiated with option to buy out contract with no penalty
- Total Savings

\$1,610,012.00 Year

Payback

9.98 Years

Mod 001 - Buy Down



- Basic Buy Down \$6,838,000.00
 - Payment Stream paid for in full
 - Government saved \$1,030,412.00 in finance charges.

Mod 002 _Scope Refinement



- Total Contract Value of
 - \$16,069,895.00 decreased by \$1,195,062.00 to \$14,874,823.00
- Additional Buy Down of \$607,564.00
- Basic Financed Value
 - \$9,231,885.00 decreased by \$1,802,626.00 to \$7,429,259.00
- Interest Rate
 - 9.24% decreased by 3.8% to 5.44%

Mod 002 _Scope Refinement



- Payments Changed
 - \$131,776.63 a month for 120 months (\$15,813,195.00)
 - \$1,420,760.70 a year for 6 years (\$8,514,438.80)
- Total Savings \$1,578,563.00
- Payback9.42 Years

Mod 003 – Medical Air



Replaced

- two existing medical air compressors
 - high efficient Ingersoll-Rand L60W oil free rotary screw type units
- refrigerated air dryers.
 - cycling thermal mass dryers, saving energy by operating only at the power needed for the air flow at the time.

Modification Cost

\$394,689.24

Savings

\$41,222.00

Pay Back

9.57 Years

Mod 004 - Assignment of Claims



- Incorporated into contract
 - In accordance with FAR 52.232.23 (Assignment of Claims).
 - "Notice of Assignment"
 - "Instrument of Assignment"
- Signed by Contracting Officer

Mod 005 – Emission Reduction Credit (ERC)



- ERC's generated by removal of Pollution and Emission Producing Equipment
 - (3) 800kW Solar Saturn Turbines
 - NOx 14.72 tons/year
 - CO 13.83 tons/year

Mod 005 - ERC Language



- Emission Reduction Credit language identifies SDG&E as the Governments agent to bank and sell the emission credits.
 - Language refers to the value of all ERCs as a component of the salvage value of the equipment being removed and replaced under the contract.
 - Did not set a firm value on the credits but set a shared savings formula for ERCs when sold.

Mod 005 - ERC Formula



- ERC Fair Market Value (FMV) \$0 to \$1,500,000.00
 - SDG&E Share
 - 28% of the ERC FMV
 - Government Share
 - 72% of the ERC FMV

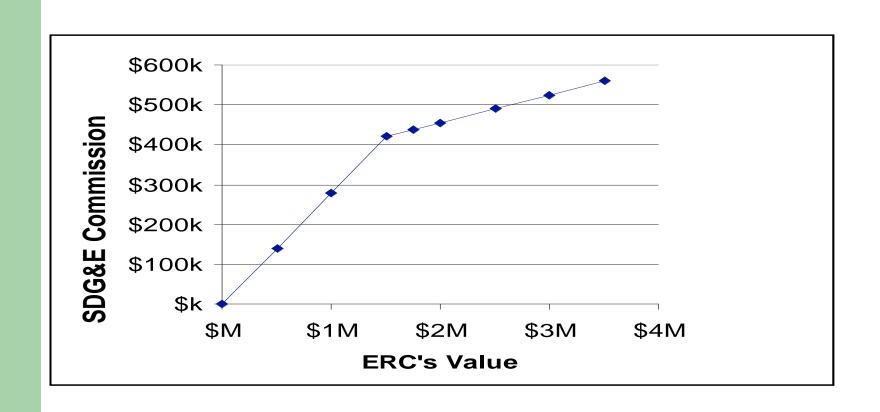
Mod 005 - ERC Formula



- ERC Fair Market Value (FMV) \$1,500,000.00 and Above
 - SDG&E Share
 - 0.07 X ERC FMV + \$315,000.00 Fixed Fee
 - Government Share
 - ERC FMV (0.07 X ERC FMV + \$315,000.00 Fixed Fee)

Mod 005 - ERC Graph





Mod 006 – Extended Warranty



Diesel Generators Failed to Meet Contract Requirements

- Units met current San Diego Air Pollution Control District (SDAPCD) requirements.
- Incorporated an extended warranty and additional liabilities upon Hawthorne
- Protect the Government if the SDAPCD invoked retroactive requirements on the emissions of the Gas Turbines.

Mod 007 & 008 Administrative



- Mod 007 formalized miscellaneous minor changes to the scope of work and contract.
- Mod 008 prepaid the financed portion of the contract providing an interest savings to the customer.

Mod 009 – Documentation of ERC Sale



- ERCs Sold for \$95,000.00 per ton
- Total Value of ERCs \$1,398,4000.00
- Navy's Share 72% or \$1,006,848.00
- Modification Closed out the Contract

THE CHECK





ACCOUNTS PAYABLE

Washpold Bank, B.A. Benevier, GA 21600.

VENDOR NO	CHECK NO	DATE	AMOUNT
86072	607429	06/11/07	*\$1,006,848.00

PAY:

ONE MILLION SIX THOUSAND EIGHT HUNDRED FORTY-EIGHT

TO THE ORDER OF: NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST WCF 1220 PACIFIC HIGHWAY SAN DIEGO CA 92132-5190

VOID AFTER SIX MONTHS

Contract Summary



- 14.8 Million Cost
- 1.5 Million Savings
- Dec 01 Apr 04
- Improved Infrastructure
- Improved Reliability

Questions & Answers



- Questions Free
- Answers.....Minor Fee
- Discussion.....Might even pay you